

AMENDMENT NO. 1

to the

INTERCONNECTION AGREEMENT

between

VERIZON NEW ENGLAND INC.

d/b/a

VERIZON MAINE

and

HARVARDNET, INC.

This Amendment No. 1 (this "Amendment") is made this 19th day of September 2000 (the "Effective Date") by and between Verizon New England Inc. d/b/a Verizon Maine ("Verizon"), a New York corporation with offices located at 185 Franklin Street, Boston, Massachusetts 02110, and HarvardNet, Inc. ("HarvardNet"), a Delaware corporation with offices at 500 Rutherford Avenue, Charlestown, Massachusetts, 02129 (Verizon and HarvardNet may be hereinafter referred to, each individually, as a "Party" and, collectively, as the "Parties").

WITNESSETH:

WHEREAS, Verizon and HarvardNet are Parties to an Interconnection Agreement under Sections 251 and 252 of the Communications Act, dated August 1, 2000 (the "Interconnection Agreement"); and

WHEREAS, the Parties desire to amend that agreement as set forth herein;

NOW, THEREFORE, in consideration of the promises and mutual agreements set forth herein, the Parties agree to amend the Interconnection Agreement as follows:

1. Amendment to Interconnection Agreement. Effective as of the date first set forth above, the Interconnection Agreement is amended hereby as follows:

A) By inserting a new Section 1.37a as follows:

"1.39a 'Line Sharing' is an arrangement by which Verizon facilitates HarvardNet's provision of ADSL (in accordance with T1.413), Splitterless ADSL (in accordance with T1.419), RADSL (in accordance with TR # 59), MVL (a proprietary technology), or any other xDSL technology that is presumed to be acceptable for shared line deployment in accordance with FCC

rules, to a particular Customer location over an existing copper Loop that is being used simultaneously by Verizon to provide analog circuit-switched voice grade service to that Customer by making available to HarvardNet, solely for HarvardNet's own use, the frequency range above the voice band on the same copper Loop required by HarvardNet to provide such services. This Agreement addresses line sharing over loops that are entirely copper loops. The Parties do not intend anything in this Agreement to prejudice either HarvardNet's position that line sharing may occur on loops constructed of fiber optic cable, digital loop carrier electronics, and copper distribution cable or Verizon's position that line sharing can only occur over copper loops or copper sub-loops."

B) By inserting a new Section 11.2.10 as follows:

"11.2.10 To the extent required by Applicable Law, Verizon shall provide Line Sharing to HarvardNet for HarvardNet's provision of ADSL (in accordance with T1.413), Splitterless ADSL (in accordance with T1.419), RADSL (in accordance with TR # 59), MVL (a proprietary technology), or any other xDSL technology that is presumed to be acceptable for shared line deployment in accordance with FCC rules, on the terms and conditions set forth herein. In order for a Loop to be eligible for Line Sharing, the following conditions must be satisfied for the duration of the Line Sharing arrangement: (i) the Loop must consist of a copper loop compatible with an xDSL service that is presumed to be acceptable for shared-line deployment in accordance with FCC rules; (ii) Verizon must be providing simultaneous circuit-switched analog voice grade service to the Customer served by the Loop in question; (iii) the Verizon Customer's dial tone must originate from a Verizon End Office Switch in the Wire Center where the Line Sharing arrangement is being requested; and (iv) the xDSL technology to be deployed by the HARVARDNET on that Loop must not significantly degrade the performance of other services provided on that Loop.

11.2.10.1 Verizon shall make Line Sharing available to HarvardNet at the rates set forth in Exhibit A. These rates and/or rate structures shall be considered interim in nature until they have been approved by the Commission or otherwise allowed to go into effect as a result of a proceeding before the Commission, whether initiated by HarvardNet or Verizon, in which HarvardNet is offered an opportunity to serve discovery and cross examine witnesses on the methodology and assumptions supporting Verizon's proposed rates and rate structures, including a tariff investigation, cost proceeding, arbitration or other evidentiary proceeding. If, as a result of any such proceeding, the Commission should approve (or otherwise allow to go into effect) permanent rates and/or rate structures different than those shown in Exhibit A, all such approved or effective permanent rates and/or rate structures shall supercede those shown in Exhibit A. The permanent rates shall be effective retroactively to September 19, 2000. The Parties shall true-up any amounts previously invoiced as if the permanent rates had been in effect as of that date. Each Party shall invoice the other for any amounts due to it as a result of such true-up, and all such invoices shall be paid in accordance with the Billing and Payment provisions of this Agreement. In addition to the recurring and nonrecurring charges shown in Exhibit A for Line Sharing itself, the following rates shown in Exhibit A and in Verizon's applicable Tariffs are among those that may apply to a Line Sharing arrangement: (i) prequalification charges to determine whether a Loop is xDSL compatible (i.e., compatible with an xDSL service that is presumed to be acceptable for shared-line deployment in accordance with FCC rules); (ii) engineering query charges, engineering work order

charges, or Loop conditioning (Digital Designed Loop) charges; (iii) charges associated with Collocation activities requested by HarvardNet and not covered by Exhibit A; and (iv) misdirected dispatch charges, charges for installation or repair, manual intervention surcharges, and trouble isolation charges.

11.2.10.2 The following ordering procedures shall apply to Line Sharing:

(i) To determine whether a Loop qualifies for Line Sharing, the Loop must first be prequalified to determine if it is xDSL compatible. HarvardNet must utilize the mechanized and manual Loop qualification processes described in the terms applicable to Digital Designed Loops, as referenced in paragraph (v) below, to make this determination.

(ii) HarvardNet shall place orders for Line Sharing by delivering to Verizon a valid electronic transmittal service order or other mutually agreed upon type of service order. Such service order shall be provided in accordance with industry format and specifications or such format and specifications as may be agreed to by the Parties.

(iii) If the Loop is prequalified by HarvardNet through the Loop prequalification database, and if a positive response is received and followed by receipt of HarvardNet's valid, accurate and pre-qualified service order for Line Sharing, Verizon will return a FOC within twenty-four (24) hours (weekends and holidays excluded).

(iv) If the Loop requires qualification manually or through an Engineering Query, three (3) additional business days will be generally be required to obtain Loop qualification results before a FOC can be returned following receipt of HarvardNet's valid, accurate request. Verizon may require additional time to complete the Engineering Query where there are poor record conditions, spikes in demand, or other unforeseen events.

(v) If conditioning is required to make a Loop capable of supporting Line Sharing and HarvardNet orders such conditioning, then Verizon shall provide such conditioning in accordance with the terms of this Agreement pertaining to Digital Designed Loops; or if this Agreement does not contain provisions pertaining to Digital Designed Loops, then in accordance with Verizon's generally available rates, terms and conditions applicable to Digital Design Loops; provided, however, that Verizon shall not be obligated to provide Loop conditioning if Verizon establishes that such conditioning is likely to degrade significantly the voice-grade service being provided to Verizon's Customers over such Loops.

(vi) The standard Loop provisioning and installation process will be initiated for the Line Sharing arrangement only once the requested engineering and conditioning tasks have been completed on the Loop. Scheduling changes and charges associated with order cancellations after conditioning work has been initiated are addressed either in this Agreement, if applicable, or in a relevant Verizon tariff effective in Maine. The provisioning interval for the Line Sharing arrangement initially shall be the standard interval of six (6) business days applicable to 2W ADSL Loops. No later than December 1, 2000,

and quarterly thereafter, the Parties shall meet to discuss whether OSS improvements, greater operational experience, or other factors have been realized that should make it practicable for Verizon to reduce the standard Line Sharing interval. In no event shall the Line Sharing interval applied to HarvardNet be longer than the interval applied to any affiliate of Verizon.

(vii) HarvardNet must provide all required Collocation, CFA, SBN and NC/NCI information when a Line Sharing Arrangement is ordered. Collocation augments required, either at the POT Bay, Collocation node, or for splitter placement must be ordered using standard collocation applications and procedures, unless otherwise agreed to by the parties or specified in this agreement.

(viii) The Parties recognize that Line Sharing is a new offering by Verizon. The Parties will make reasonable efforts to coordinate their respective roles in the early phases of the roll out of Line Sharing in order to minimize provisioning problems and facility issues. HarvardNet will provide reasonable, timely, and accurate forecasts of its Line Sharing requirements, including splitter placement elections and ordering preferences. These forecasts are in addition to projections provided for other stand-alone unbundled Loop types.

11.2.10.3 To the extent required by Applicable Law, HarvardNet shall provide Verizon with information regarding the type of xDSL technology that it deploys on each shared Loop. Where any proposed change in technology is planned on a shared Loop, HarvardNet must provide this information to Verizon in order for Verizon to update Loop records and anticipate effects that the change may have on the voice grade service and other Loops in the same or adjacent binder groups. As described more fully in Verizon Technical Reference 72575, the xDSL technology used by HarvardNet for Line Share Arrangements shall operate within the Power Spectral Density (PSD) limits set forth in T1.413-1998 (ADSL), T1.419-2000 (Splitterless ADSL), or TR59-1999 (RADSL), and MVL (a proprietary technology) shall operate within the 0 to 4 kHz PSD limits of T1.413-1998 and within the transmit PSD limits of T1.601-1998 for frequencies above 4 kHz, provided that the MVL PSD associated with audible frequencies above 4 kHz shall be sufficiently attenuated to preclude significantly degrading voice services. HarvardNet's deployment of additional Advanced Services shall be subject to the applicable rules and regulations of the FCC.

11.2.10.4 HarvardNet may only access the high frequency portion of a Loop in a Line Sharing arrangement through an established Collocation arrangement at the Verizon Serving Wire Center that contains the End Office Switch through which voice grade service is provided to Verizon's Customer. HarvardNet is responsible for providing a splitter at that Wire Center that complies with ANSI specification T1.413 through one of the splitter options described below. (The Siecor splitter proposed for use by HarvardNet as of May 12, 2000 is deemed by both Parties to be compliant with ANSI T1.413.) HarvardNet is also responsible for providing its own DSLAM equipment in the Collocation arrangement and any necessary CPE for the xDSL service it intends to provide (including CPE splitters, filters and/or other equipment necessary for the end user to receive separate voice and data services across the shared Loop). Two splitter configurations are available. In both configurations, the splitter must be provided by HarvardNet and must satisfy the same NEBS requirements that Verizon imposes on its own splitter equipment or the splitter equipment of

any Verizon affiliate. HarvardNet must designate which splitter option it is choosing on the Collocation application or augment. Regardless of the option selected, the splitter arrangements must be installed before HarvardNet submits an order for Line Sharing.

Splitter Option 1: Splitter in CLEC Collocation Area

In this configuration (option “A” in the New York collaborative), the HarvardNet-provided splitter (ANSI T1.413 or MVL compliant) is provided, installed and maintained by HarvardNet in its own Collocation space within the Customer’s serving End Office. The Verizon-provided dial tone is routed through the splitter in the CLEC Collocation area. Any rearrangements will be the responsibility of HarvardNet.

Splitter Option 2: Splitter in Verizon Area

In this configuration (option “C” in the New York collaborative), Verizon inventories and maintains a HarvardNet-provided splitter (ANSI T1.413 or MVL compliant) in Verizon space within the Customer’s serving End Office. At HarvardNet’s option, installation of the splitter may be performed by Verizon or by a Verizon-approved vendor designated by HarvardNet. The splitter is installed (mounted) in a relay rack between the POT Bay and the MDF, and the demarcation point is at the splitter end of the cable connecting the CLEC Collocation and the splitter. Verizon will control the splitter and will direct any required activity. Verizon will perform all POT (Point of Termination) Bay work required in this configuration. Verizon will provide a splitter inventory to HarvardNet upon completion of the required augment.

(i) Where a new splitter is to be installed as part of an initial Collocation implementation, the splitter installation may be ordered as part of the initial Collocation application. Associated Collocation charges (application and engineering fees) apply. HarvardNet must submit a new Collocation application, with the application fee, to Verizon detailing its request. Standard Collocation intervals will apply.

(ii) Where a new splitter is to be installed as part of an existing Collocation arrangement, or where the existing Collocation arrangement is to be augmented (e.g., with additional terminations at the POT Bay), the splitter installation or augment may be ordered via an application for Collocation augment. Associated Collocation charges (application and engineering fees) apply. HarvardNet must submit the application for Collocation augment, with the application fee, to Verizon. An interval of seventy-six (76) business days shall apply.

11.2.10.5 HarvardNet will have the following options for testing shared Loops:

11.2.10.5.1 Under Splitter Option 1, HarvardNet may conduct its own physical tests of the shared Loop from HarvardNet’s collocation area. If it chooses to do so, HarvardNet may supply and install a test head to facilitate such physical tests, provided that: (i) the test head satisfies the same NEBS requirements that Verizon imposes on its own test head equipment or the test head equipment of any Verizon affiliate; and (ii) the test head does not interrupt the voice circuit to any greater degree than a conventional MLT test. Specifically, the

HarvardNet-provided test equipment may not interrupt an in-progress voice connection and must automatically restore any circuits tested in intervals comparable to MLT. This optional HarvardNet-provided test head would be installed between the "line" port of the splitter and the POT bay in order to conduct remote physical tests of the shared loop.

11.2.10.5.2 Under Splitter Option 2, either Verizon or a Verizon-approved vendor selected by HarvardNet may install a HarvardNet-provided test head to enable HarvardNet to conduct remote physical tests of the shared Loop. This optional HarvardNet-provided test head may be installed at a point between the "line" port of the splitter and the Verizon-provided test head that is used by Verizon to conduct its own Loop testing. The HarvardNet-provided test head must satisfy the same NEBS requirements that Verizon imposes on its own test head equipment or the test head equipment of any Verizon affiliate, and may not interrupt the voice circuit to any greater degree than a conventional MLT test. Specifically, the HarvardNet-provided test equipment may not interrupt an in-progress voice connection and must automatically restore any circuits tested in intervals comparable to MLT. Verizon will inventory, control and maintain the HarvardNet-provided test head, and will direct all required activity.

11.2.10.5.3 Under either Splitter Option, if Verizon has installed its own test head, Verizon will conduct tests of the shared Loop using a Verizon-provided test head, and, upon request, will provide these test results to HarvardNet during normal trouble isolation procedures in accordance with reasonable procedures.

11.2.10.5.4 Under either Splitter Option, Verizon will make MLT access available to HarvardNet via RETAS after the service order has been completed. HarvardNet will utilize the circuit number to initiate a test. This functionality will be available on November 1, 2000.

11.2.10.5.5 The Parties will continue to work cooperatively on testing procedures. To this end, in situations where HarvardNet has attempted to use one or more of the foregoing testing options but is still unable to resolve the error or trouble on the shared Loop, Verizon and HarvardNet will each dispatch a technician to an agreed-upon point at the Main Distribution Frame (or in exceptional cases to an agreed upon site in the field) to conduct a joint meet test to identify and resolve the error or trouble. Verizon may assess a charge for a misdirected dispatch only if the error or trouble is determined to be one that HarvardNet should reasonably have been able to isolate and diagnose through one of the testing options available to HarvardNet above. The Parties will mutually agree upon the specific procedures for conducting joint meet tests.

11.2.10.6 Verizon and HarvardNet each have a joint responsibility to educate its Customer regarding which service provider should be called for problems with their respective voice or advanced service offerings. Verizon will retain primary responsibility for voice band trouble tickets, including repairing analog voice grade services and the physical line between the NID at the Customer premise and the point of demarcation in the central office. HarvardNet will be responsible for repairing advanced data services it offers over the Line Sharing arrangement. Each Party will be responsible for maintaining its own equipment. Before either Party initiates any activity on a new shared Loop that may cause a disruption of the voice or data service of the other

Party's Customer, that Party shall first make a good faith effort to notify the other Party of the possibility of a service disruption. Verizon and HarvardNet will work together to address Customer initiated repair requests and to prevent adverse impacts to the Customer.

11.2.10.6.1 When Verizon provides inside wire maintenance services to the Customer, Verizon will only be responsible for testing and repairing the inside wire for voice-grade services. Verizon will not test, dispatch a technician, repair, or upgrade inside wire to clear trouble calls associated with HarvardNet's advanced services. Verizon will not repair any CPE equipment provided by HarvardNet. Before a trouble ticket is issued to Verizon, HarvardNet shall validate whether the Verizon Customer is experiencing a trouble that arises from HarvardNet's advanced service. If the problem reported is isolated to the analog voice-grade service provided by Verizon, a trouble ticket may be issued to Verizon.

11.2.10.6.2 In the case of a trouble reported by the Customer on its voice-grade service, if Verizon determines the reported trouble arises from HarvardNet's advanced services equipment, splitter problems, or HarvardNet's activities, Verizon will:

- a) Notify HarvardNet and request that HarvardNet immediately test the trouble on HarvardNet's advanced service.
- b) If the Customer's voice grade service is so degraded that the Customer cannot originate or receive voice grade calls, and HarvardNet has not cleared its trouble within a reasonable time frame, Verizon may take unilateral steps to temporarily restore the Customer's voice grade service if Verizon determines in good faith that the cause of the voice interruption is HarvardNet's data service.
- c) Upon completion of steps (a) and (b) above, Verizon may temporarily remove the HarvardNet-provided splitter from the Customer's Loop and switch port if Verizon determines in good faith that the cause of the voice interruption is HarvardNet's data service.
- d) Upon notification from HarvardNet that the malfunction in HarvardNet's advanced service has been cleared, Verizon will restore HarvardNet's advanced service by restoring the splitter on the Customer's Loop.
- e) Upon completion of the above steps, HarvardNet will be charged a Trouble Isolation Charge (TIC) to recover Verizon's costs of isolating and temporarily removing the malfunctioning advanced service from the Customer's line if the cause of the voice interruption was HarvardNet's data service.
- f) Verizon shall not be liable for damages of any kind for temporary disruptions to HarvardNet's data service that are the result of the above steps taken in good faith to restore the end user's voice-grade POTS service, and the indemnification provisions set forth in Section 25.2 shall control in such instances."

C) By adding the following language immediately after Section 24.5 of the Interconnection Agreement:

“**24.6** Notwithstanding any other provision of this Agreement, with respect to Verizon’s provision of Line Sharing to HarvardNet hereunder, each Party shall release, indemnify, defend and hold harmless the other Party for any Loss suffered, made, instituted, or asserted by the other Party’s Customer(s) that arise from disruptions to that Customer’s service or from any violation of Applicable Law governing the privacy of the Customer’s communications, and that are proximately caused by the grossly negligent or willful acts or omissions of the indemnifying Party in connection with a Line Sharing arrangement.”

D) By revising the Pricing Schedule of the Interconnection Agreement to reflect the rates contained in Exhibit A of this Amendment.

2. Conflict between this Amendment and the Interconnection Agreement. This Amendment shall be deemed to revise the terms and provisions of the Interconnection Agreement to the extent necessary to give effect to the terms and provisions of this Amendment. In the event of a conflict between the terms and provisions of this Amendment and the terms and provisions of the Interconnection Agreement, this Amendment shall govern, *provided, however*, that the fact that a term or provision appears in this Amendment but not in the Interconnection Agreement, or in the Interconnection Agreement but not in this Amendment, shall not be interpreted as, or deemed grounds for finding, a conflict for purposes of this Section 2.

3. Counterparts. This Amendment may be executed in one or more counterparts, each of which when so executed and delivered shall be an original and all of which together shall constitute one and the same instrument.

4. Captions. The Parties acknowledge that the captions in this Amendment have been inserted solely for convenience of reference and in no way define or limit the scope or substance of any term or provision of this Amendment.

5. Scope of Amendment. This Amendment shall amend, modify and revise the Interconnection Agreement only to the extent set forth expressly in Section 1 of this Amendment, and, except to the extent set forth in Section 1 of this Amendment, the terms and provisions of the Interconnection Agreement shall remain in full force and effect after the date first set forth above.

IN WITNESS WHEREOF, the Parties hereto have caused this Amendment to be duly executed and delivered by their duly authorized representatives as of the date first set forth above.

HARVARDNET, INC.

VERIZON MAINE

By: _____

By: _____

Printed: Mark Washburn

Printed: Jeffrey A. Masoner

Title: President and Chief Executive Officer

Title: Vice-President - Interconnection Services
Policy & Planning

Application of Rate Elements (ME)

<i>Rate Element</i>	<i>\$ Amount</i>	<i>Mo.</i>	<i>NRC</i>	<i>* Option 1¹</i>	<i>* Option 2 VERIZON installs</i>	<i>* Option 2 CLEC vendor installs</i>
Application Fee <i>- Augment</i>	\$1500		<i>X</i>	<i>Not applicable unless augmenting POT Bay</i>	<i>(1)</i>	<i>(1)</i>
Engineering & Implementation Fee <i>-Additional Cabling</i>	\$2323.41		<i>X</i>	<i>Not applicable unless augmenting POT Bay</i>	<i>(1)</i>	<i>(1)</i>
Splitter Installation Cost	\$1369.60			<i>Not applicable</i>	<i>(1)</i>	
<i>POT VERIZON/Splitter Termination, 2 Wire VG</i>	<i>\$.11</i>	<i>X</i>		<i>(2) SAC²s</i>	<i>(2) SACs</i>	<i>(2) SACs</i>

Both Option 1 and Option 2 assume there is an existing Collocation Arrangement.

(1) = one required

(2) = two required

¹ Option 1: A CLEC-provided splitter shall be provided, installed and maintained by the CLEC in their own Collocation space. Rearrangements are the responsibility of the CLEC. Verizon dial tone is routed through the splitter in the CLEC Collocation area.
Option 2: Verizon will install, inventory and maintain CLEC provided splitter in Verizon space within the Serving Central Office of the lines being provided. Verizon will have control of the splitter and will direct any required activity.

² Service Access Charge (SAC) is the same as Interconnection Access Charge or a cross connect.

Application of Rate Elements (ME)

<i>Rate Element</i>	<i>\$ Amount</i>	<i>Mo.</i>	<i>NRC</i>	<i>* Option 1</i>	<i>Option 2 VERIZON installs</i>	<i>* Option 2 CLEC vendor installs</i>
<i>SAC Cable & Frame Termination, 2Wire VG</i>	<i>\$.19</i>	<i>X</i>		<i>(2) SACs</i>	<i>(2) SACs</i>	<i>(2) SACs</i>
**Verizon/Splitter Support– Per Shelf	<i>\$3.34</i>	<i>X</i>			<i>(1)</i>	<i>(1)</i>
Maintenance of Splitter Equipment per splitter	<i>\$51.52</i>	<i>X</i>		<i>(1)</i>	<i>(1)</i>	<i>(1)</i>
WideBand Test Access per line	<i>\$2.01</i>	<i>X</i>		<i>(1)</i>	<i>(1)</i>	<i>(1)</i>

** Although this rate assumes that each relay rack contains 14 splitter shelves, the rate applies only to the shelves that CLEC actually uses in a given relay rack.

Application of Rate Elements (ME)

<i>Rate Element</i>	<i>\$ Amount</i>	<i>Mo.</i>	<i>NRC</i>	<i>* Option 1</i>	<i>Option 2 VERIZON installs</i>	<i>* Option 2 CLEC vendor installs</i>
<i>Service Order</i>	\$9.59		X	(1)	(1)	(1)
<i>Expedite</i>	\$14.88					
<i>Central Office Wiring Initial</i>	\$41.53		X	(1)	(1)	(1)
<i>Expedite</i>	\$59.40					
<i>Central Office Wiring Additional</i>	\$20.66		X	(1)	(1)	(1)
<i>Expedite</i>	\$29.55					
<i>Provisioning</i>	\$0.27		X	(1)	(1)	(1)
<i>Expedite</i>	\$0.40					
<i>Field Installation Dispatch</i>	\$121.35		X	(1)	(1)	(1)
<i>Expedite</i>	\$170.92					
<i>Manual Intervention Surcharge</i>	\$28.26		X	(1)	(1)	(1)
<i>Expedite</i>	\$43.86					
<i>TC Not Ready</i>	\$77.37		X	(1)	(1)	(1)
<i>Loop Qualification Data Base per link</i>	\$0.64			(1)	(1)	(1)
<i>Manual Loop Qualification</i>	\$115.43		X	(1)	(1)	(1)
<i>Engineering Query</i>	\$150.50		X	(1)	(1)	(1)
<i>Engineering Work Order</i>	\$687.40		X	(1)	(1)	(1)
<i>OSS Charges</i>	<i>TBD</i>					
<i>Unbundled Loop</i>	\$0.00	X				
<i>Conditioning charges</i>	<i>Per interim state specific conditioning rates</i>		X			

EXHIBIT A

<i>Trouble Dispatch</i>				(I)	(I)	(I)
<i>Misdirects</i>						
<i>Dispatch In</i>	\$75.50		X			
<i>Expedite Dispatch In</i>	\$102.58		X			
<i>Dispatch Out</i>	\$148.09		X			
<i>Expedite Dispatch Out</i>	\$197.49		X			